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THE TRANSCENDENCE OF KNOWLEDGE

AS an unaccounted-for agent of protest, the transcendence of knowledge has been playing a rôle like that of the moral conscience. Pragmatically, it is definable as something which embarrasses every newly proposed division of experience. The former division of experience into *ideas* had grasped a very real unit, but not the elusive thing that makes knowledge knowledge. Empiricism at present, in practise, divides experience into *experiences*, outlining a given judgment, for instance, as 'an' experience. The validity of the judgment is hereby confined inevitably to its psychological career, and the sense of the truth-error contrast is lost. The meaning of 'a cognitive experience,' referring beyond itself for verification or correction, can not accommodate itself to these limits: such is Professor Bakewell's contention.[1] But empiricism has still a third category of division: experience is a genus; there are several *kinds of experience*, of which cognition is one, coordinate and alternative with the rest.[2] Granting the category, exception is taken to the implied ranking in behalf of the transcendence of knowledge. For these several kinds are presumably known or knowable, *i. e.*, embraced or embraceable in a cognitive experience, and without alteration; hence cognition can not be of the same stuff or in the same field with

[1] This JOURNAL, Vol. II., No. 19, p. 521.

[2] It is not difficult to recognize here the problem of Brentano, and to some extent his solution. For Brentano, the ultimate consideration in psychological classification is the *mode* in which consciousness refers to its object, *Urteil* being but one of these modes. For Dewey, the real is 'that which is experienced, *as* it is experienced,' that is, experience has a *what* and a *how*,—ultimate characters, not reducible to one another—and cognition is but one of several hows, modes, or sorts. This word in whatever form—kind, mode, quality—is always a word of last resort in classification. A doctrine which falls back upon it is essentially empirical, and the test of such a doctrine lies in the attempt to reduce the alleged ultimate 'sorts' to one, whether of their own number or otherwise. (Professor Dewey's article in Vol. II., No. 24, of this JOURNAL, tends to modify somewhat this interpretation of his position. I let the comment stand for what it is worth.)

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any other 'sort.' Indeed, the distinguishing mark of its sort, if we are so to speak of it, must be negative—it is stuffless, not to say unconscious. With this touch of paradox in characterizing the experience which once enjoyed the status of *consciousness par excellence* Professor Woodbridge[3] has taken an important step toward meeting Professor Dewey's requirement that the transcendence of knowledge shall appear and be defined: transcendence is non-appearance; knowledge, as a peculiar sort, is non-phenomenal.

If this be true it is not obvious how Professor Dewey's other requirement, that cognition *per se* be subjected to empirical study, is to be complied with. The foregoing results are all gotten by logic and are all negative. It is indeed impossible to determine empirically whether or not cognition alters its object; the difficulty lies in gaining knowledge of the object apart from cognition. But it is possible to observe the development of experience (*a*) from *Vorstellung* to *Urteil,* (*b*) from problematic judgment to verified judgment, (*c*) from an attitude in its first intention ethical, esthetic or otherwise to self-consciousness, *i. e.,* to reflexive judgment upon that experience; and it is possible to distinguish the invariant from the variable elements in that development. These are all experiences which rise to the point of cognition, properly so called, from something else or from something less. The result of such observation is partly to confirm and partly to correct the results of the aforesaid logic.

I.

It is the nature of knowledge to *supervene* upon an experience that is not yet knowledge. At the moment of cognition, that is, at the moment of judgment, or of certainty, a distinct change takes place in experience, but it takes place upon an invariant core: the experience which at that moment becomes 'object' in full standing is undisturbed in quality, intensity and continuity with its context. These inclusive and non-interfering characters of cognition seem especially conspicuous in the case of reflexive judgments; but they are equally true of all judgments of current experience. Every cognizance of an object is expressible in terms of the judgment, *Ab* (the Thing *A* with the predicate *b*) *is*: and by that 'is' purports to come upon and report the thing as independent of and beyond—not experience, but the act of judging. If by transcendence we mean these non-displacing, non-transforming, transparent, superventive characters of the cognitive experience, transcendent is a title which can not be denied it.

From this account it may appear (1) that experience and cognition are by no means coextensive, and yet (2) that cognition is the

[3] This JOURNAL, Vol. II., No. 21, pp. 573 ff.

consummation of every other experience. That my present experience in so far as it is immediate or uncertain should pass into an object-experience and be knowledge or known is an ideal of every moment. Objectification is in some sense a step nearer reality, though it be, with Münsterberg, in another respect a step away therefrom. Further, it is but the obverse of the frictionless supervening of knowledge that every experience is from its incipiency adapted to be known; it comes into existence bearing the organ of attachment for knowledge, the schema of knownness, in situ *at its outside*, so that only a change in the lighting, the suggestion of a question perhaps, is necessary to make the inclusive cognition appear. If, then, we admit vanishing degrees of knowledge, we may still say that all experience is cognitive *quâ known:* at least a surface-film of knowing plays over every inch of its contour. This position of primacy should also be taken up into the concept of its transcendence.

But what is it that supervenes? Are we unable empirically to get beyond the negative results of our logic? If cognitive experience, like other experience, is essentially subject to be known and under the same condition that it shall not be altered; if, therefore, in being known it must retain the transparent, non-evident character which differentiated it from known experience, it can not be known. Is this the conclusion? The doubt which such a knot creates about the finality of our contrast between stuff of experience and stuffless experience is strengthened by the following facts. There is no experience, whether cognitive or otherwise, which may not in turn be made subject to ethical consideration or esthetic judgment; and in these value-experiences, just as in cognitive experience, the object-experience must exist unaltered. Whatever title the cognitive experience may have had to transcendence must be shared equally with these others. And while the several kinds of experience seem to make for hierarchy and unity rather than for severalty and coordinacy, that hierarchy is ambiguous. But if the relative transparency which we called transcendence pertains to value-experience with reference to *its* material core or object quite as much as to cognitive experience with reference to *its* core, then none of these transcendencies can be unconscious-experiences—in the sense of experiences without content—otherwise there would be several distinguishable kinds of unconscious experience, which is absurd. And this is, indeed, the crux of the problem: how cognition as a peculiar type of experience can be referred to anything of the 'content' class; and the perplexity of it lies, I believe, in misapprehending the conditions of translating knowledge into terms of the category 'experience,' a category whose claim to ultimateness is yet to be made good.

II.

Cognitive experience, as a category, is a reflexive and secondary accomplishment of the mind. This does not mean that it is a creation, nor that it is a discovery, as of some elusive and almost invisible content, but that it is *as a category* an after-view. In direct living we are in presence of *things;* we know nothing of *cognition.* The cognitive experience, as direct, reports not itself, but its object; and its most immediately empirical language is, 'The thing is,' or 'is here,' or 'I know the thing,' but never 'The thing is held in cognitive experience.' Whatever the change may be that makes this last language possible, it is a change which throws into relief a new *environment of the object.* Previously, a thing was known by virtue of its simple presence;[4] now it is seen to be known quite as much *by virtue of the presence of something else than itself.* The necessary conditions of knowledge are, first, that the thing known be present in some way in the stuff of experience; but, second, that it be present under *specific inner auspices.* Knowledge, from this angle, is no longer transparent, and its transcendence is wrapped up in these now visible auspices of the thing therein known. In fact, it is here that we come upon that ingredient of transcendence which Professor Bakewell has brought into the field: to this envelope, as other than the experience known, is referable in some way that 'pointing beyond itself' which is characteristic of experience as known.

Neither the office nor the precise relevance of this environing something-else has yet its perfect explanation. The essential phenomena broadly described are these: In the case of sense impressions, this contextual furniture, in the rôle of fringe, or perhaps of conductor for pragmatic radiations, has something to do with lifting that impression—in its own right a mere immediate sign—to the dignity of 'object.'[5] The more elaborate experiences, in their immediate (as yet unknown, but knowable) condition, are like nascent atoms or chemical radicals with unsatisfied valences, which require only the juxtaposition of their proper 'others' to enter into the state of knownness.[6] In sum, and apart from all theories, it is an empirical datum that without the presence of 'other contents,' be their

[4] 'The thing *Ab is*' = 'The thing *Ab* (here now) is (beyond here-now)' = 'I know *Ab*,' in which the 'I' absorbs merely the here-now elements, and the 'know,' the not-here-now elements, of the original '*is*.' It is as if one had said cabalistically, 'Here not-here *Ab*.'

[5] In which the paradox of placing the burden of objective reference upon what is, *by the only possible distinction,* inner, has to be met.

[6] In which the paradox of placing the burden of cognition, regarded as a function, upon contents which are *prima facie* irrelevant to the object, has to be met.

action no more than catalytic, is nothing known that is known. And the essential difficulty of the situation is that of empowering these other contents of experience at the moment of cognizance with any other value than that of plain *other contents;* whereas it is precisely *not* in their capacity as other contents that they are *functional in knowing* the given object of attention. It is here that association fails, and that the other theories which have superseded it share in its failure: they assume that whatever knowing-power these other contents have lies in their face- or content-value as like, contiguous, or in some way of kindred motive, to the contents known. They thus assume a double knowledge to explain a single one. If it were possible so much as to conceive contents, as such face-values, actively engaged in 'knowing' incoming contents, such a cognitive experience would by no means be transparent to itself; these other contents would be part of the defined object, contrary to hypothesis. This entire landscape of face-value-meanings (upon which aspect of experience the thought of the psychological empiricist tends to terminate) is barren for the understanding of cognition: everything here is a logical flatwash within which the essential epistemological distinctions of true and false, certain and uncertain, inner and outer, ideal and real, can find no tenable hold. In whatever sense it is possible to speak of knowing as an experience, in that sense it is necessary to regard it as a *process* with a physiology of its own; in whatever sense it is possible to regard knowing as a process, it is necessary to distinguish *functions* that conspire in that process; and since functions are non-empirical (not to say metaphysical) things, it is necessary to find *structural differentiations* in experience as their empirical signs. It is not the stuff, primarily, but the structure of experience which is significant for the description of knowing—the stuff only as embodying or manning the structure. An object is known not alone by virtue or presence in experience, nor by virtue of the presence of something else, but by virtue of being taken up into the structure of experience as, at that moment, a specific organ thereof.[7]

[7] It is a fair subject for possible experiment how much of the self could be of different stuff without affecting a given cognition. It might seem that any substitution of content would alter the new object in some degree; but the identity of a judgment is determined solely by the placing which it effects, and it is conceivable that there might obtain a perfect interdependence of superficial contents of experience, and yet a large degree of indifference thereto in the course of judgments. The removal of an office from a noisy to a quiet quarter would doubtless have an effect on the average of the bookkeeper's errors; but there is a conceivable range of variation in the auditory context whose effect on a particular series of judgments would be not approximately, but absolutely, *nil.*

III.

If this is the right methodic clue a little rapid sketching ought to make definite what we mean by the transcendence of knowledge. Knowing, as process, is essentially the work of placing a given experience within the entire system of experience. For the placing of a given experience it is a matter of relative indifference *what* its immediately neighboring experiences have been and are; absolutely necessary is only *that* they be, and that a *systematic continuity* exist between them and such other past or present experiences as in structural order belong nearest the experience to be known. Abstractly, this continuity is the sufficient as well as the necessary condition for accurate knowledge; but the conductivity of experience, so to speak, is imperfect. Hence error; and hence it is that an experience is never finally known until it has been experienced *as* neighbor to all its possible systematic neighbors. Experience never presents all these combinations; and such as it presents are distributed unevenly; things in physical groups have enormously better natural chances for getting into correct order, in all the various series that pass through them, than have esthetic experiences, for instance. But in any case the thing that makes knowledge knowledge is the structural interest in the whole interplay between focal and environing materials in experience.[8]

The various aspects of the transcendence of knowledge, then, come naturally together as follows: (1) Knowing is transparent in action, *i. e.*, structure and function are not visible in experience as materials in the same field with the contents then and there being placed; structure is relatively abstract, function (if we dare say so) relatively metaphysical, and both relatively independent, with reference to these contents. (2) Knowing concerns materials beyond those belonging to the presented object. It is possible to locate at a particular point in the time-field, etc., the subject-matter of an act of knowledge; but the act of knowledge can not itself be located: it is omnipresent. If, indeed, we prefer here to extend the range of the word 'present' rather than use the word 'transcendent,' we may do so. In knowing a physical object, we are indeed in presence of the whole of space; and our experience of space is not an aggregate of numerous experiences, but is one continuous experience from birth

[8] Structure, in the person of the environing contents, acts, and in the person of the focal contents is acted upon: the thing is 'understood' to a degree, and to a degree means a new line in structure for further understandings. These are the fundamental functional relations in knowledge. A cognitive experience is *true* when environing materials can assume focal functions without altering the established systematic relations. See this JOURNAL, Vol. II., No. 18, pp. 480-482.

to death. But with this understanding of presence, we should have to distinguish various 'presences,' the psychological moment of judgment indicating the minimal and nuclear presence with which that cognition is concerned. Knowing does not change its object; it creates it. It neither changes nor creates the stuff of experience. The object is created not as subject-matter, or stuff, but (*a*) as an outlined mass of stuff (*b*) having its roots in the remote corners of the real universe of my experience. The structure of experience *as belonging to the object* is the accomplishment of the knowing process: in this respect the object likewise is omnipresent, and by no means confined to the psychological here-now.[9]

'Of what sort,' then, 'is cognitive experience?' The possibility of knowing knowledge depends on the fact that the structure of experience, as concerned in the knowing of physical things, is compoundable: the situation between contents and 'other contents' observable in the current cognition of things may be repeated as between this whole situation and still other contents. Cognition, as a *sort,* is known, therefore, with reference to a world that envelopes it. What is this world beyond cognition? Is it the world of the value-judg-

[9] In psychological reflection the stuff actually belonging to the object appears to diminish. The nucleus of presented material that has prompted a given judgment may turn out to be surprisingly small. All the further material that went to fill out its rounded objectivity has lost itself in the environing arena or penumbra, which under the same sort of scrutiny attains proportions equally surprising, as if in compensation. In brief, the original object appears dismembered and unrecognizable. In view of this, Professor Münsterberg does not hesitate to use the word transformation: real is the object as we experience it in the full current of (what I beg leave to call) teleological synthesis; the scattered elements which psychological reflection discovers are artifacts.

Apart from the language of illusion in such a view of cognition so much is unimpeachable: Each thing as known in experience is not known at any psychological point, but has its roots in the utmost corners of the eternal person. Reflection finds members of what was a unitary stroke of cognition dispersed throughout the whole universe of a mind, though the thing known has its nuclear sign at a particular point in that universe.

But the hypothesis of transformation has no enlightening power. It is requisite, and, therefore, possible, to express the facts of cognition in terms of experience without losing grasp upon the conceptual identity of contents. The situation is analogous to that which gives rise in the physical world to the problem of *actio in distans* and the comment of Carlyle is equally to the point: 'You say a thing can not act where it is not—with all my heart, but pray where is it?' There is this difference, however, that whereas hypothesis is the essence of physical construction, the elements with which a theory of knowledge deals must remain real *as experienced.*

ment, perchance, or the world of feeling? Doubtless these are structural neighbors of cognition in certain series.[10]

But it must be noted that this 'world beyond' is not a fixed order: these kinds of experience seem to a certain extent to play the rôle of world beyond *for each other,* so that cognitive experience is known by value experience, and value experience in turn by cognition. This suggestion receives some color from the apparent need of explaining the norms of cognition, if at all, by the norms of action (pragmatism, action theory, etc.), and the ethical 'ought' by an 'is.'

WILLIAM ERNEST HOCKING.

ANDOVER.

PSYCHOLOGY AND THE LOGICAL JUDGMENT WITH REFERENCE TO REALISM

IN various quarters there has lately been a renascence of 'realism' so called. Mr. G. E. Moore's realism of concepts is made the epistemological basis of Mr. B. Russell's imposing work 'The Principles of Mathematics,' and it finds an answering echo in this country. Professor Woodbridge proclaims himself a realist and asserts that the addition of knowledge to a reality hitherto without it is simply an addition to it and not a transformation of it. Dr. Montague tells us that consciousness is simply a relation between things, but does not tell what is the *differentia* of this peculiar relation by which things get a cognitive consciousness added to them. Presumably things would be just the same without consciousness and, if so, why and how does this peculiar relation called consciousness get superimposed on reality? How does consciousness get born into a world that would perhaps get along better without this disturbing factor which can not seem to rid itself of the illusion that it too has a determinate reality? Again we seem to have another variant of realism in the 'immediate' empiricism of Professors Dewey and James, who agree in eliminating the transcendent reference from cognition.

I confess at the outset that I have not been able to make out just what these various writers mean by realism. For Professor Woodbridge and Dr. Montague cognitive thought seems to be an epiphenomenon; for Professors Dewey and James, a single phase of immediate psychic process on a level with all other psychic processes.

[10] It is worth while observing that the fact that an object is known never as a species, but always as an individual, plays a rôle in the knowing of knowing different from the rôle it plays in the knowing of anything else; knowing is known *always in particular acts, and it is known first as physical knowledge.* Knowledge of the last attained degree of reflection can not, in the nature of the case, be known and reckoned with the species.

Now, the Platonic view aside, realism in *epistemology* means that human thought somehow gets into right relation with reality, whereas realism in *metaphysics* means that the real is wholly external to and independent of thought. And in recent discussions one seems to find a confused shifting from one to the other of these uses of the terms. I suppose we are all realists in the sense of holding that cognitive thinking is not shut up with itself as a psychical process, but is in contact with a real world. But if it be maintained that there is a real world entirely independent of thought which may be passively mirrored or represented in thought, but which in itself goes on entirely irrespective of whether thought is at work in it, I find such a notion contradictory to the very notion of cognitive consciousness. For in such case thought is an otiose excrescence in a world which would still be the same without it. In such case cognitive consciousness must be an unaccountable by-product of the cosmic machinery. This sort of metaphysical realism strikes me as a violent attempt to get out of an *impasse* created by a confusion of the psychological and the logical treatments of cognition. It is, therefore, perhaps opportune to reiterate some truisms on this point.

Judgment is the fundamental *act* of thought, and a right notion of the nature and function of judgment is indispensable to an adequate conception of the logical function and ultimate position of thought with reference to reality. I, therefore, propose to start from the definition of judgment as the reference of an idea to reality, or the 'intellectual function which defines reality by significant ideas,'[1] and to show that the assumption of a reality entirely independent of thought has its roots in a fallacious conception of thought.

In the definition of judgment as the reference of an idea to reality, 'idea' is used not in the psychological sense of a mere mental existent, but as *meaning*. We must be on our guard against confusing these two uses of 'idea.' Even Mr. Bradley seems to drop back into the psychological mode of treatment when he says, "A meaning consists of a part of the content (original or acquired) cut off, fixed by the mind and considered apart from the existence of the sign."[2] To speak thus as if reasoning and judgment were static, psychologically given contents, is to obscure the true bearings of a conception of judgment that is in itself entirely adequate. I prefer to say simply that it is the 'meaning' of an idea that refers to reality and that meaning is dynamic, a matter of active tendency and direction. In cognitive thinking judgment is the *act* of cognitive reference to reality, and hence not to be regarded as in any sense a psychological

[1] Bosanquet, 'Logic,' Vol. I., p. 104.

[2] 'Principles of Logic,' p. 4.

content. Let us consider for a moment the distinction between the psychological and the logical points of view.

It is necessary for the descriptive analysis of psychology that conscious process be regarded as having separate and independent existence sundered from the world of social and physical existence. This sundering of consciousness from its world-context is absolutely indispensable to the work of exact analysis. Analytic psychology treats the individual consciousness as if it flowed on independent of anything else. This artificial isolation is applied alike to the mental processes which have cognitive, esthetic or ethical reference. Now if the logician or epistemologist sets out from this standpoint of psychological abstraction he will never find a clear or straight road back to the real world with which consciousness as cognitive deals. The reference of thought to reality in the act of judgment is at some point an *immediate reference* or it is no reference at all. Thought for logic is primarily and fundamentally thought-referring-to-an-existent-order, not thought as idea simply entertained in somebody's head. Nothing but confusion can result if the logical and epistemological consideration of thought set out by sundering, in the fashion of psychological analysis, thought from its object of reference. It is this initial error in the treatment of judgment that makes plausible the recent 'realisms' which maintain that thought makes no sort of difference to the existence and reality of outer things, and that even the abstract propositions of mathematics must be entities existing independently of any knowing mind. Truly, if judgment be primarily a conscious process having mere psychical existence in individual heads, if cognition consists in the entertaining of ideas by a consciousness sundered from the universe of things, then thought is but the passive reflector of a world of entirely independent entities. In this case thought may in some mysterious fashion represent things, but it does nothing. It makes no difference to reality. There is, then, no way of bridging the chasm from the thought-side to the real world outside, and our so-called universal truths—those of logic and pure mathematics—either are mere individual psychic existents like any other content of consciousness or they have a mysterious existence as independent entities. (Analogous problems arise in regard to the concepts of ethics and esthetics when these two are treated in psychological fashion as mere contents of consciousness. Duty, goodness and beauty are then either purely subjective or they are independent entities.)

I should be the last to deny that we may derive aid in the development of a logical theory of cognition from psychological analysis. But we shall surely be led astray unless we bear in mind that thought in its actual functioning as instrument of cognition is

an act of immediate and indivisible reference to reality. And, on the other hand, if we keep in mind that judgment as the immediate reference of a meaning to reality is the act of a moving or fluid mind in relation to an environment only relatively stable. We shall be able to understand why logical thinking, too, undergoes an evolution, and we need not be greatly troubled by the problem of erroneous judgment. An erroneous judgment is a reference to reality, erroneous either because the mind in making this reference has not taken sufficiently into account the systematic context of its immediate meaning or because meanwhile the real context has shifted in some respect. The failure of the immediate meaning can only be discovered by an actual reference of it to reality; and the test consists in trying to fit the particular judgment into a more or less connected system of judgments that have proved themselves workable and consistent.

The objection to the above conception of judgment from the existence of such judgments, as a 'centaur has the lower body of a horse and the head and shoulders of a man,' rests on a confusion. The above proposition is a judgment with reference to a mythological universe 'of discourse,' which again is related to the real world through the implied assertion of the real existence of men and horses. All false ideas and erroneous judgments have psychical existence, and the assertion of their existence is a true judgment since it refers to reality in which every individual mind has a place. Again, the judgment, 'there is truth,' is the assertion that what is meant or signified by 'truth' is involved in the world of fact or reality. (I should say that the judgment, 'truth exists,' is badly put, and that it is better to differentiate truth's actuality from the actuality of other things by saying 'truth is valid' or 'knowledge *means* or *signifies* reality.') A serious difficulty seems to arise from the case of mathematical and logical judgments. It may be said that the judgment $2 + 2 = 4$ is true even if two things do not and have not anywhere existed and the truth of such judgments can not be constituted by any one's thinking them. For if they were made true by being thought, they might be false, since thought is as likely to be false as true. The latter objection rests again on the confusion of judgment as a cognitive and over-individual act of reference to reality and propositions as mere psychical existents. To judge that $2 + 2 = 4$ is to mean that the real world is so constituted that whenever a rational mind performs the operation of adding two things to two things the result will be four, and the assertion that this judgment is true whether there are really in the world any minds to think four things derives its specious force from failure to observe that the bare symbols mean and refer to actual operations of thought in

counting. Merely to think of two things is at least to assert the universal operation of thought meant by the figure 2. Without this minimum of reference the statement $2+2=4$ is meaningless. Either the truths of mathematics and logic are principles of actual thinking or they are material entities. The latter supposition is meaningless. The former means that the principles of logic and pure mathematics are expressive of universal conditions of valid thinking in normal minds. If one's thought is to be normal and have a place in that consistent or systematic whole by which alone thought can validly mean reality, one must follow the condition of this common or over-individual thought-structure.

The reality of abstract truths, then, is a thought-reality, but not a mere psychological existence. Like all actual judgments, the judgments of mathematics are logical acts which transcend psychological existence and take their places in an organic and self-consistent system, which latter is the determining ideal that is, at least in part, actualized in the body of science. And the simplest hypothesis on which to ground the validity of this ideal system and by which to account for the common or over-individual thought-structure involved in all judgment will perhaps, after all, prove to be that of a general thinking consciousness. I do not advance this doctrine as the inevitable outcome of reflection on the basis of judgment, but simply to insist that it is a theory seriously to be reckoned with.

J. A. LEIGHTON.

HOBART COLLEGE.

SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

AT a meeting held in conjunction with the New York Section of the American Psychological Association, on the afternoon and evening of November 27, 1905, with Professor Woodbridge in the chair, Professor Robert MacDougall was elected Chairman for the coming year and Professor R. S. Woodworth Secretary. The following are abstracts of the papers read:

Smell Discrimination of Two Hundred and Fifty-five Students: WILL S. MONROE.

Students were provided with sets of small phials filled one third full of common odors,—chiefly essential oils. Each set contained

20 odors. Nostrils were alternately used; five seconds were given for the stimulation, and one minute was allowed for recording the result and resting the nostrils. After every seven tests, the windows were opened and the room aired. In all, 255 students were tested. The average number of odors correctly named was 6.72. Four students named 12 correctly; two students, 11; and 5 students, 10. Two of the students were able to identify but 1 odor each; 15 students, but 2 odors each; and 17 students, but 3 odors each.

Wintergreen was correctly identified by 77 per cent. of the students; camphor, 75 per cent.; peppermint, 75 per cent.; vanilla, 74 per cent.; cloves, 65 per cent.; cinnamon, 56 per cent.; spearmint, 38 per cent.; turpentine, 36 per cent.; tar, 36 per cent.; lemon, 30 per cent.; nutmeg, 27 per cent.; anise, 26 per cent.; pennyroyal, 21 per cent.; sassafras, 15 per cent.; bay rum, 9 per cent.; hemlock, 4 per cent.; bergamot, 3 per cent.; asafœtida, 2 per cent.; wormwood, 1 per cent.; and lavender, half of one per cent. A census of color names showed that the students believed themselves familiar with certain odors, such as lavender, which they were unable to recognize.

Linguistic Standards: FREDERIC LYMAN WELLS.

A historical standard is necessary for the regulation of linguistic usage, but the present literary interpretation of it is open to many objections, being reactionary in character and inconsistent in its admissions and exclusions. Models of linguistic excellence, as determinative of that body of elements to be considered good use, are to be sought among works whose criteria of value are more objective in character than is the case at present, as their value can be more rapidly and more accurately determined, and they are in closer touch with the actual needs of the language. The introspection of the author of the average 'Principles of Rhetoric' should not be accepted as final in determining the interrelationship of these elements of good use. It is possible to determine linguistic values of all sorts by statistical methods, which give not only the most valid determination possible, but also the measure of this validity. Determinations of so apparently subjective a character as linguistic force can be made with a validity that approximates practical certainty. These experimental determinations do not coincide with any of the definitions of force which the introspective grammarians have laid down.

Preliminary Report on 'A Threshold Study of the Reading Pause': F. M. HAMILTON.

Previous investigators of the problem of reading have agreed

upon the short exposure method as best for psychological analysis. Introspection is facilitated most when the exposure is less than the shortest reading pause, *i. e.*, when all eye movements are excluded. The apparatus most generally used is the tachistoscope of the fall screen variety. The word has been uniformly treated as the unit of perception in reading, the effort being to determine the factors or 'cues' of word recognition—their character and order of occurrence.

Previous tachistoscopic studies have confined themselves chiefly to the reading of isolated words; the present study has attempted to adapt the method to reading in context.

A second adaptation is its use in analyzing processes at the threshold of word recognition by reducing the exposure time to a period approximating the time differences of the perceptibility of their attributes, the presupposition being that various attributes of objects lie at varying distances from the threshold.

And still a third untried possibility of this method consists in reports upon the marginal field of perceptual regard in addition to the reports upon the field of distinct vision.

The experiments have already proceeded far enough to give assurance that the completion of the study will shed additional light upon the questions of literal reading, reading cues, value of context, etc.

Vision and Localization During Rapid Eye Movements: R. S. WOODWORTH.

An attempt was made to throw some additional light on the question first raised by Cattell[1] as to what is seen during movements or jumps of the eye from one fixation point to another. Two opposing views are those of Holt,[2] who holds to a complete anesthesia or inhibition of the visual center during the movement, and of Dodge,[3] who believes that vision there is possible but under ordinary conditions not actualized, because the faint blur produced by moving the eye across a variegated field is so brief and meaningless as to be ignored, just as entoptic phenomena are ignored. Proceeding on the supposition that if the latter view were correct it should be possible by attention and practice to become conscious of the stimuli that affect the eye during movement, the author has convinced himself of the following facts:

[1] *Psychological Review*, 1900, VII., pp. 325–343, 507–508.

[2] *Ibid.; Monograph Supplements*, 1903, IV., pp. 3–45; *Psychological Bulletin*, 1905, II.

[3] *Psychological Review*, 1900, VII., pp. 454–465; *Psychological Bulletin*, 1905, II., pp. 193–199.

1. During head movements, an object held in the mouth may remain in clear vision.

2. During convergence, the two monocular fields may be seen to move across each other.

3. During eye-jumps proper, after-images may remain in consciousness if the lids are closed (Exner), or if the background is dark or plain; it is also possible, in short jumps, or at the beginning and end of longer ones, to see entoptic spots move across the background.

4. External objects moving in the same direction as the eye are distinctly seen when their angular velocity with respect to the eye coincides with that of the eye at any part of its jump (Cattell, Dodge). With reference to Holt's objection that what is seen may be the positive after-image, appearing after the eye has come to rest, it should be noted that the objects so brought to clear vision are correctly localized in space, instead of being projected against the background at the new point of fixation, as would be the case with after-images. Thus not only vision, but correct localization of objects seen, is possible during eye-jumps.

5. Stationary objects over which the eye passes can also be seen after practice. Fusion, flicker, and especially apparent motion of the objects, corresponding to the actual motion of their images across the retina, can all be seen. A peculiarity which calls for further discussion is that the apparent extent of the object's motion is much less than the actual motion of the eye as measured against the background.

The author's conclusion is that vision with the moving eye is essentially the same as that with the fixed eye when the external field moves.

The Measurement of Scientific Merit: J. McKeen Cattell.

The speaker explained how he had selected a group of one thousand scientific men for the study of individual differences and the conditions on which success in scientific work depends. In each of the twelve principal sciences the students who had done original work were arranged in the order of merit of their work by ten competent judges. Thus was obtained the order of merit and also the probable error of each position, it being based on ten independent observations. This probable error is inversely as the differences in scientific method, it being small where the differences are marked and becoming larger as the differences are less. It is thus possible to construct a curve representing the distribution of scientific merit in these thousand scientific men, and this curve agrees rather closely with the positive half of the curve of error. The first hundred men

differ among themselves about as much as the next two hundred or the last seven hundred.

Data were also given in regard to the distribution of the thousand leading scientific men of the country. The birth-rate of these scientific men was 27 per million of the population, it being 50 in cities and 24 in the country. It was 109 in Massachusetts, 47 in New York, 23 in Pennsylvania, 12 in Missouri and 1 in Mississippi and in Louisiana. Their present distribution is somewhat similar. Thus 134 scientific men were born in Massachusetts and 144 reside there; 183 were born in New York and 192 reside there. The central states, with the exception of Illinois, tend to lose their scientific men. Thus 75 were born in Ohio, and 34 now reside there. The distribution of these scientific men among different institutions is as follows: Harvard, 66; Columbia, 60; Chicago, 39; Cornell, 33; U. S. Geological Survey, 32; U. S. Department of Agriculture, 32; Johns Hopkins, 30; California, 27; Yale, 26; Smithsonian Institution, 22; Michigan, 20; Massachusetts Institute of Technology, 19; Wisconsin, 18; Pennsylvania, 17; Stanford, 16; Princeton, 14; Minnesota and Ohio State, 10 each.

Temperament as Affecting Philosophic Thought: BROTHER CHRYSOSTOM.

It is impossible either to understand the great philosophers or to appreciate their influence if we limit ourselves to a purely scientific standpoint. Temperament enters so largely as a factor both in determining the principles on which they lay special stress and in gaining disciples for their respective schools, that we are forced to consider them also from a literary view-point if we would do them justice. The ingredients that form temperament may be arranged under the following heads: (1) Heredity, which is especially helpful in tracing tendencies favoring the pursuit of the concrete; (2) environment, which is closely interwoven with heredity and may be called a condition of its development as a factor in mental life; (3) race and nationality. No Frenchman will treat a subject in the same manner as a German; (4) the attraction exercised by the first philosopher who interests a thinker; (5) the time or epoch in which the philosopher lived; for history is governed to a great extent by the law of reaction and adjustment, which results in the formation of cycles of thought; (6) the personality of the founder. This leads him to lay emphasis upon certain phases of truth to the neglect of others. To estimate his influence we must attend to the elements of truth contained in his system of thought.

Are Mental Processes in Space? W. P. MONTAGUE.

The speaker protested first against the current paradoxical view of mental processes as real occurrences that occur nowhere. They should be located in space for the following reasons: (1) They are naturally felt to be within the body; (2) they form no exception to the generally accepted rule that an invisible event, such as an electric current, is to be located in the visible object that directly conditions it; (3) their phenomenal existence in space (like their existence in time) is not in conflict with the transcendental view that space and time are appearances; (4) that they are neither punctiform nor figured is no argument against their location in space, for many things—notably, sounds and odors—are definitely located in space without being regarded as either punctiform or figured; (5) the objection that there is no room in space for anything but matter and motion, and that thoughts and feelings if they were really in the brain would have to be regarded as visible substances between or alongside of the brain molecules, is invalid, for it disregards the fact that sensations are intensive and not extensive, and that they must, therefore, occupy space in the same way as other intensities, such as stresses, velocities and accelerations, which exist in space *along with* their matter and not *alongside* of it.

The last part of the paper explained and defended the hypothesis that mental states are the modes of potential energy (expressible in terms of the higher derivatives of space with regard to time) into which the kinetic energy of the nerve currents must be transformed in order to be redirected. The theory, if true, would justify the belief in interaction without violating the parallelists' contention that the spatial can only be causally related to what is in space.

R. S. WOODWORTH,
Secretary.

REVIEWS AND ABSTRACTS OF LITERATURE

Das Farbenempfindungssystem der Hellenen. W. SCHULTZ. Leipzig: J. A. Barth. 1904. Pp. 227; 3 colored tables.

This book returns to the old subject, discussed several decades ago by Gladstone, Geiger, Magnus and their opponents, of the color sense of the Greeks as revealed in their use of color names. The author, primarily a philologist, has informed himself regarding the psychology of color, and stands in this respect on a distinctly higher level than his predecessors. His studies lead him also to quite a different conclusion from the famous one of Geiger and Magnus, for whereas the older authors hold that the Greeks, at the dawn of their history, sensed red and yellow only, and only slowly developed a sense for green and blue, Schultz rejects the notion of such a development, since he finds the same looseness of color naming to

obtain from the earliest writers to the latest. He reaches, however, the scarcely less startling conclusion that the Greeks were as a race color-blind, and yellow-blue blind at that.

The author seeks first of all to establish general criteria for inferring sensory defects from looseness of nomenclature. Where a color name is primarily the name of an object which itself presents different colors—such as the apple—an apparent confusion in the use of the name is no proof of true sensory confusion. Moreover, it is necessary to distinguish between the range of application of the name (its 'Spielbereich'), and a genuine manifoldness of usage ('Vieldeutigkeit'). To include under one name colors that shade into each other, such as green and blue, is no proof of sensory confusion; but to include discontinuous colors is proof. [Even this refined criterion is not above criticism, since, as Myers[1] has shown for present-day Scots, as well as for various primitive peoples, and Chamberlain[2] for North American Indians, the same word may be applied to discontinuous tastes, sour and bitter, or salt and bitter, though it is very unlikely that these races lack any of the four primary taste sensations. A continuity may indeed be felt between sour and bitter, or between salt and bitter, but it is of an emotional rather than of a purely sensory character. It is a mistake to suppose that people who have not made a psychological analysis of sensations should use sense names to denote *purely sensory* qualities, or that the continuity which they feel between their different applications of the same name should necessarily be a purely sensory continuity.]

The author proceeds (pp. 16–82) to examine the usage of 51 color names. In distinction from his predecessors, he lays comparatively little stress on citations from the poets, believing that prose writers, and especially scientific writers, furnish the more exact and literal sense. He makes use especially of Aristotle and his commentators, of Plato, Theophrastus, Democritus, Galen and the lexicographers. Of the 51 color names, 19 showed two or more discontinuous meanings, and of these 8 are strictly abstract names, not naming the color by reference to any object; they include the common names for red, yellow, green, blue and violet. From these linguistic facts, the author believes it possible (p. 94) to infer that the Greek color sense was deficient in comparison with what we know as the normal. Incidentally he asserts that no similar conclusion can be drawn from the Latin.

Although the linguistic material shows the color sense of the Greeks to have been abnormal, it does not, alone, permit an exact diagnosis of the abnormality. The author, therefore, turns to other sources of information. The descriptions of the rainbow by Xenophanes, Anaximenes, Aristotle, Metrodorus and Posidonius are utilized; most of these do not give a detailed description, but Aristotle and Posidonius seem to aim at completeness. Aristotle's description is correct, but that of Posidonius

[1] 'The Taste-Names of Primitive Peoples,' *British Journal of Psychology*, Vol. I., p. 117.

[2] 'Primitive Taste Words,' *American Journal of Psychology*, Vol. XIV., p. 410.

appears to err in the order of the colors, by interchanging green and violet. Aristotle's account of after-images is also considered, and his curious statement is pointed out that the after-image has the same color as the original light, for which Aristotle gives the examples of white and green lights. Next, the author turns to the detailed accounts of simple and mixed colors given by Plato and Democritus. It is argued that Democritus would be likely to base his statements on experiment, but when the Democritean components for a given color are mixed, the result is often quite different from that color. It would appear that Democritus was color-blind; and the same would apply to Plato but for the doubt whether Plato would experiment. A colored table shows the striking discrepancies between the Democritean results of color mixture and the normal results.

A start is also made towards an archeological study of the Greek color sense as revealed in their paintings. Only one example was available, and that in a lithographed reproduction, of which a copy is inserted—a fresco unearthed at Eleusis, representing Zeus wearing a violet robe, on which, however, there are green streaks, and resting his feet on a wooden stool, the top of which is, however, green. The author concludes (p. 149) that the painter, and also those who accepted the painting and who enjoyed it, were unable to distinguish green from violet and from wood-color. As regards all but the painter himself, however, it should be noted (p. 192) that our author showed the picture to about 100 persons, only one of whom spontaneously noticed anything wrong in the coloring.

After a chapter devoted to the description of different types of color-blindness, the author proceeds to a diagnosis of the Greek color-sense. He decides that the most striking confusion is between greens and violets, as seen in the painting of Zeus, in Posidonius's description of the rainbow, in one of Democritus's false mixtures, and in the interchangeable use of words for green and violet. As these are confusion colors in blue-yellow blindness, he diagnoses the Greek anomaly in that way; and finds his diagnosis confirmed by the lack of definite, unequivocal terms for yellow and blue in the language (for *κυανοῦν* he decides to have meant a luminous black, with which blue was confounded; *ξανθόν* meant orange rather than yellow, while *ὠχρόν* covered the whole range from red through yellow to green). In an appendix, he seeks to meet objections raised on the score of probability by pointing out that every people is in part color-blind, *i. e.*, contains color-blind individuals and strains; the Greeks may have had so large a proportion of the color-blind as to determine the language of color.

If, however, the author's argumentation is critically examined, it falls of its own weight. It proves too much. Rather arbitrarily, in making his diagnosis, he has emphasized one class of confusions (green-violet), to the neglect of others which he had established fully as well. This will be seen from the list of color names on which he bases his linguistic proof of abnormality, with their proper and anomalous uses:

ἐρυθρόν, properly *red;* also *green.*

ξανθόν, properly *orange, yellow,* or *brown;* also *green.*

ὠχρόν, *red, orange, yellow, green.*

χλωρόν, properly *yellowish green;* also *green, brown.*
χαροπόν, properly *light blue, green;* also *red.*
κυανοῦν, *blue* and *black.*
ἁλουργές, properly *violet;* also *green.*
γλαυκόν, *red, orange, green, blue.*

From this list it will be seen that green is not confused with violet only, but often with red, and also with orange, yellow and blue,—in fact, with every color of the spectrum. Red is confused with orange, yellow, green and blue; yellow with red, orange, green and blue; and blue with red, orange, green and black. All in all, it would seem that no two colors were clearly distinguished, and the proper diagnosis would be *total* color-blindness. About the same thing can be said of the color mixtures of Democritus: some are correct, some show yellow-blue blindness, but others red-green blindness. Probably the correct diagnosis in his case is that he was not experimenting after all, but speculating, as Aristotle was when he derived all the colors from a mixture of black and white. Aristotle's after-image statement would seem to show that the negative after-image of any color—since white and green are simply examples—appeared to him like the original; therefore he was unable to distinguish any color from its complementary, and was totally color-blind. Even the painter of the Eleusinian Zeus confused green not only with violet (yellow-blue blindness), but also with the brown of wood (red-green blindness). For a people who developed a large color vocabulary, and used it in the main with little evident confusion, the diagnosis of total color-blindness would be a *reductio ad absurdum* of the argument; yet that was what the author's evidence led him to, if taken in all seriousness, rather than to his comparatively weak-kneed diagnosis of yellow-blue blindness.

Evidence which, taken at its face value, leads to an absurd conclusion must be worth less than at first appears. In fact, a rereading of the author's work shows a possible escape from nearly every piece of evidence presented. If Democritus did not base his statements on experiment; if Posidonius, in asserting the rainbow to contain 'first, red; second, purple and violet; third, blue and green,' was thinking of some other than the spatial order of the colors; if the *lining* of Zeus's robe, in the Eleusinian painting, was intended to be green—then nearly all but the linguistic evidence would disappear. The confusions in color names are scarcely better established. Thus ἐρυθρόν is used so consistently to mean red as to leave our author no doubt of its proper application; but he finds Theophrastus, in speaking of a group of red flowers, describing one as ἐγχλωρότερον, 'more tinged with green,' than another; still, a red corolla may have green streaks on it. ξανθόν had apparently a wide range of application, running from red to greenish yellow; the author asserts, however, without of course being able to present his evidence for this universal negative, that it never meant pure yellow; so that as orange and as yellowish green it would have discontinuous applications. Practically the same applies to ὠχρόν; it should be said that the equation ξανθόν = ὠχρόν = χλωρόν seems to be founded only on the late lexicographer Hesychius. χλωρόν clearly meant a yellowish green; difficulty arises

from its occasional application to such things as blood, roses and the nightingale, but the other meaning 'fresh' may perhaps explain these cases. For *χαροπόν* the different meanings are only very indirectly established. *ἀλουργές* usually meant violet, and the meaning green is only got from Posidonius's description of the rainbow, discussed above. Our old friend *γλαυκόν* is shamefully treated; first it is denied its traditional meaning of bright or light (as in *γλαυκῶπις Ἀθήνη*), and compelled to do duty as a color name; then it is caught referring to objects of several different colors, and so overwhelmed with confusion. On the whole, there are very few of the instances quoted for which a plausible explanation does not readily occur to mind. And there is one general consideration that should be borne in mind: here and there an author may indeed have been color-blind. Out of 70 authors cited, probably some two or three were red-green blind, provided this defect were as prevalent among the Greeks as among modern Europeans. But as for showing that the Greeks as a race were defective in the color sense, the evidence adduced amounts to practically nothing. The close relation between *κυανοῦν* (blue) and black is, indeed, curious, but it is of common occurrence in the speech of other peoples, who, on being tested, are found not to be yellow-blue blind, nor specially defective in the perception of blue.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

Ueber die Erzeugung physikalischer Kombinationstöne mittels des Stentortelephons. KARL L. SCHAEFER. *Annalen der Physik,* Bd. 17, 1905. Pp. 572–583.

This paper is of interest to psychologists by reason of certain technical suggestions. Schaefer finds that various pairs of tuning-forks sounding in front of a Stentormikrophon are reproduced with great distinctness in a telephone that may be in a distant room, and that the first and sometimes the second difference-tone are actually emitted from the transmitter, and so strongly as to excite resonators or even tuning-forks of the corresponding vibration rates. An objective summation-tone coming from the telephone was also in several cases demonstrated. It seems certain that these difference- and summation-tones are produced by the telephone diaphragm and not by the microphone, and Schaefer suggests that, in spite of numerous adverse criticisms, Helmholtz may have been right in supposing that 'subjective' difference-tones and combination-tones originate in the ear-drum, which is in many respects similar to the diaphragm of a telephone.

E. B. HOLT.

HARVARD UNIVERSITY.

Eine virtuelle stereoskopische Täuschung. PAUL CZERMAK. *Zeitschrift für den physikalischen und chemischen Unterricht,* XVII., Jahrgang. S. 341.

After briefly reviewing the optical illusions described by Roget, Plateau, Faraday and Emsmann, the author described a new illusion that

depends on the same principles as the illusions of Plateau and Faraday; and that is specially adapted to demonstration before large classes. Two polished rods are fixed vertically on a disk that rotates in a horizontal plane, and at different distances from the center of the disk. The rotation produces (by virtue of after-images) the appearance of two concentric, shimmering cylinders, of which the smaller is generated by the rod that is nearer the center of rotation. Within this inner cylinder there appear two dark vertical rods that seem to be at rest as long as the rate of rotation is kept constant, but to move if the rate is varied. The width of the two rods is not the same. Their appearance is due only to the persistence of after-images and the momentary concealment of one rod by the other as the disk rotates; their apparent position within the inner cylinder is a true stereoscopic phenomenon. The appearance of the rods rests on precisely the same principles as those of what has sometimes been called the Münsterberg-Jastrow illusion; and like this latter, Czermak's illusion can be photographed. The author describes mathematically the position and number of the rods seen, together with several interesting complications that may be introduced by the use of several rods, etc.

E. B. HOLT.

HARVARD UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. November, 1905. *Les lois de la solidarité morale* (pp. 441–471): G. RICHARD. – Solidarity is implied in the concept of moral value. The moral life is a collective effort to save society from dissolution. In this effort society exaggerates its own type and so makes individuals in so far automatic, with the result that when new conditions arise criminality develops. Criminality is the result of weakened automatic sociality. *Les abstraits émotionelles* (pp. 472–485): L. DUGAS. – Feelings are not generalized by 'fusion.' Two types are distinguished: emotional abstractions, which are generalizations resulting from the grouping of various objects around a feeling-quality; and abstract emotions, which are names for the laws binding together experiences. As interest directs our acts, so the framework of these act-series is an abstract feeling. The abstraction of feelings explains that of 'ideas.' *La moralité de l'art* (pp. 486–510): P. GAULTIER. – Art is neither moral nor immoral, but amoral. It is not limited to the representation of ethical objects, but only to that of enjoyable ones. In such objects sensuous enjoyment appears, but only as one of many types. The esthetic and the ethical attitudes show structural similarities in that each subordinates desires to an end. This may account for the uplifting, quasi-moral effect of art. Yet art has no moral mission. *Revue générale: Le matérialisme historique et son évolution:* C. G. PICAVET. – A criticism of the works of Marx and Engels. The development of Marxism under Engels was away from dogmatism. Engels recognized finally the weaknesses in the materialistic view of history, and modern Marxists throw off the Hegelian scheme

entirely, regarding the economic view as simply a 'canon of historical interpretation.' *Analysis et comptes rendus:* Gustave le Bon, *L'évolution de la matière:* JULES SAGERET. Paul Sollier, *Le mécanisme des émotions:* JANKELEVITCH. J. Grasset, *Les centres nerveux:* JANKELEVITCH. Ossip-Lourié, *La psychologie des romanciers russes du XIX. siècle:* L. ARRÉAT. A. Michotte, *Les signes régionaux:* B. BOURDON. Wallin, *Optical Illusions:* B. B. *Révue des périodiques étrangers.*

Del Vecchio, Giorgio. *I presupposti filosofici della nozione del diritto.* Bologna: Zanichelli. 1905.

Guastella, Cosmo. *Saggi sulla teoria della conoscenza.* Palermo: Sandron. 1905.

Raich, Maira. *Fichte seine Ethik und seine Stellung zum Problem des Individualismus.* Tubingen: Mohr. 1905. 4 M.

Schmid, Bastian. *Philosophisches Lesebuch.* Leipzig: B. G. Teubner. 1905. 3.40 M.

NOTES AND NEWS

DR. WENDELL T. BUSH, lecturer in philosophy at Columbia University, has been associated in the editorial management of this JOURNAL. Communications may be addressed to him at the office of the JOURNAL, Sub-Station 84, New York City.

IN accordance with announcements already made, the American Philosophical Association and the American Psychological Association met on invitation of the department of philosophy of Harvard University, in Cambridge, December 27–29, 1905. Addresses were made by the retiring presidents, Professor Dewey addressing the Philosophical Association on 'Beliefs and Realities,' and Professor Calkins the Psychological Association on 'A Reconciliation of Structural and Functional Psychology.' The meetings were well attended, and the discussions particularly active and interesting. Members of both associations enjoyed a most generous hospitality extended to them by the members of the department of philosophy of Harvard University and by the Harvard Corporation. Officers for the ensuing year were elected as follows: For the Philosophical Association—President, Professor William James, of Harvard University; Vice-president, Ernst Albee, of Cornell University; Secretary-treasurer, Professor J. G. Hibben, of Princeton University; new members of the Executive Committee, Professor A. K. Rogers, of Butler College, and Professor Frank Thilly, of Princeton University. For the Psychological Association—President, Professor J. R. Angell, of the University of Chicago; Secretary-treasurer, Mr. W. H. Davis, of Lehigh University; new members of the Council, Professor Mary W. Calkins, of Wellesley College, and Professor C. E. Seashore, of the University of Iowa. A detailed report of the meetings may be expected in subsequent numbers of this JOURNAL.

In the *Astrophysical Journal* for October Mr. F. R. Moulton, of the University of Chicago, brings forward a new theory to account for the evolution of the solar system. Mr. Moulton and Professor T. C. Chamberlin have studied the theory of Laplace from the dynamical standpoint, and the many contradictions which they have found lead them to reject it. In the new theory a spiral nebula is assumed, containing primitive nuclei about which the planets and their satellites subsequently formed. We may account for the original spiral nebula by assuming a star to approach the sun, producing tides in the sun's matter, and the continuation of these tides might cause large masses to be ejected and drawn into a spiral. A work soon to be published promises a fuller statement of the hypothesis.

In a review in *Nature* of Duhem's 'Les Origines de la Statique' occur the following suggestive comments: "The main result—and this is established beyond all reasonable doubt—is that the mechanics of the fifteenth and sixteenth centuries must not be regarded as a sudden achievement but as a development of ideas current in the thirteenth and fourteenth centuries, many of which were unscrupulously reproduced without acknowledgment. . . . And although this conclusion may somewhat dim our mental picture of the Renascence, it will deepen out piety towards those *obscuri viri* who cultivated science and learning when they were most in danger of extinction."

The Philosophical Society of the Ohio State University announces the following calendar for the winter of 1905–06: Tuesday, October 17, president's address; Tuesday, November 14, 'The Value for Consciousness of Bodily Reactions,' Burtis Burr Breese; Tuesday, January 9, 'The Non-Euclidean Contribution to Philosophy,' George Bruce Halstead; Tuesday, February 13, 'The Conservation of Energy,' William Henry Scott; Tuesday, March 13, 'Recent Studies in Heredity,' Edward Loranus Rice; Tuesday, April 10, 'Religion in Education,' William Oxley Thompson. The officers of the society are A. E. Davies, president; D. R. Major, vice-president; F. L. Landacre, secretary; J. E. Hagerty, treasurer.

At the last meeting of the Board of Regents of the University of Michigan President Angell reported the receipt of a gift of $450 for the University from Mrs. George S. Morris, of Ann Arbor. Of this amount $350 is to establish a fellowship in philosophy bearing the name of the late George S. Morris. Professor Morris was a member of the department of philosophy in the University from 1881 until his death in 1889, and professor of modern languages and literature nearly all of the preceding decade.

Mr. James Carleton Bell, Ph.D. (Harvard), for one year a student in the Leipzig psychology laboratory, has been appointed instructor in experimental psychology at Wellesley College. With Dr. Gamble, associate professor in psychology, Dr. Bell directs the research work and superintends the second year training course in laboratory psychology.

The Journal of Philosophy Psychology and Scientific Methods

There is no similar journal in the field of scientific philosophy. It is issued fortnightly and permits the quick publication of short contributions, prompt reviews and timely discussions. The contents of the last five issues are as follows.

Volume II. No. 22. October 26, 1905.

The Reeducation of an Aphasic. SHEPHERD IVORY FRANZ.
Discussion: Immediate Empiricism. JOHN DEWEY.
Universals: A Criticism. WALTER B. PITKEN.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume II. No. 23. November 9, 1905.

The Relation of Feeling to Discrimination and Conception. KATE GORDON.
The Real and the Pseudo Psychology of Religion. IRVING KING.
Discussion: Dr. Bush's Definition of Consciousness. PERCY HUGHES.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume II. No. 24. November 23, 1905.

Feeling and Conception. KATE GORDON.
Mental Elements of Dreams. WILL S. MONROE.
Discussion: The Knowledge Experience and its Relationships. JOHN DEWEY.
Cognitive Experience and its Object. B. H. BODE.
Reply to Dr. Hughes. WENDELL T. BUSH.
Reviews and Abstracts of Literature. Journals and New Books. Notes and News.

Volume II. No. 25. December 7, 1905.

Association and Atomism. FELIX ARNOLD.
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